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PATENT CLAIMS

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1. Method for controlling a device for the ablation of parts of the human eye by means  
5 of laser irradiation, the control being exercised by an electronic data-processing  
system, characterized in that, once the optical and geometric eye data have been  
established, a graphic simulation of the ablation is carried out in the form of a  
graphic visualization.
- 10 2. Method according to the previous claim, characterized in that the input of all the  
treatment parameters to be entered manually is carried out by means of a central  
input/output device.
- 15 3. Method according to the previous claim, characterized in that the establishment of  
the operating parameters comprises one or more of the following process steps
- 3.1 establishment of topography data of the eye,  
3.2 establishment of refraction data of the eye,  
3.3 establishment of higher-order aberration data by wave-front measurement;  
20 3.4 establishment of pachymetry data;  
3.5 calculation of height data of the deviations relative to a reference surface,  
3.6 calculation of a height data difference relative to the reference surface,  
3.7 calculation of an adapted height data difference relative to the reference  
surface,  
25 3.8 calculation of ablation coordinates for the laser.
4. Method according to one of the previous claims, characterized in that, in a further  
intermediate step, height data of the deviations of the cornea surface relative to a  
reference surface are calculated from the topography and/or refraction data.

5. Method according to one of the previous claims, characterized in that, in a further intermediate step, the tissue to be abraded from the cornea is determined from the height data of the deviations of the cornea surface.
- 5 6. Method according to one of the previous claims, characterized in that in the topography data, K values and/or a curvature map and/or a topography map and/or a power map are incurred.
7. Method according to one of the previous claims, characterized in that the spherical  
10 and/or cylindrical refraction are included in the refraction data.
8. Method according to one of the previous claims, characterized in that the reference surface of the topography data is an ellipsoid.
- 15 9. Method according to one of the previous claims, characterized in that the reference surface of the refraction data is a spheroid.
10. Method according to one of the previous claims, characterized in that the device includes a laser and/or means for wave-front measurement.
- 20 11. Device for treating the human eye by means of laser irradiation comprising an apparatus for measuring aberrometry, an apparatus for measuring topography, an apparatus for measuring pachymetry, a laser unit and an electronic data-processing apparatus, which by using a processing model can link the measurement values and  
25 other patient data to ablation values.
12. Device according to one of the previous claims, characterized in that it includes a measuring equipment arrangement which allows measurement of aberrometry, topography and also pachymetry by means of a fixing.
- 30 13. Device according to the previous claim, characterized in that the ablation can be displayed graphically as an ablation map.